

medium, color mixture due to changes in viewing angle hardly occurs.

According to a second aspect of the present invention, there is provided a method of manufacturing an organic EL display device comprising; forming conductive color changing layers and first electrodes, the color changing layers capable of being electrically connected to the first electrodes; forming an organic luminescent medium above the color changing layers; and forming second electrodes to sandwich the organic luminescent medium between the second electrodes and the color changing layers, a voltage being applied to the first and second electrodes.

Preferably, the first electrodes and the color changing layers are patterned by an etching method.

Preferably, the color changing layers are formed on the first electrodes by a micelle electrolytic method.

The present invention can be applied to organic EL display devices of bottom emission type where light is taken from a substrate or top emission type where light is taken from the direction opposite to the substrate.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a sectional view of an organic EL display device according to a first embodiment of the present invention, illustrating the structure thereof.

Fig. 2 is a sectional view of an organic EL display device according to a second embodiment of the present invention, illustrating the structure thereof.

Fig. 3 is a sectional view of an organic EL display device according to a third embodiment of the present

invention, illustrating the structure thereof.

Fig. 4 is a sectional view of an organic EL display device according to a fourth embodiment of the present invention, illustrating the structure thereof.

5 Fig. 5A is a sectional view of an organic EL display device according to a fifth embodiment of the present invention, illustrating the structure thereof.

10 Fig. 5B is an enlarged sectional view of an under electrode and a color changing layer as shown in Fig. 4 and 5A.

Fig. 6 is a sectional view of an organic EL display device according to a sixth embodiment of the present invention, illustrating the structure thereof.

15 Fig. 7 is a sectional view of an organic EL display device according to a seventh embodiment of the present invention, illustrating the structure thereof.

Fig. 8 is a sectional view of an organic EL display device according to an eighth embodiment of the present invention, illustrating the structure thereof.

20 Fig. 9 is a sectional view of an organic EL display device according to a ninth embodiment of the present invention, illustrating the structure thereof.

25 Fig. 10 is a sectional view of an organic EL display device according to a tenth embodiment of the present invention, illustrating the structure thereof.

Fig. 11 is a sectional view of an organic EL display device according to an eleventh embodiment of the present invention, illustrating the structure thereof.

30 Fig. 12 is a sectional view of an organic EL display device according to a twelfth embodiment of the present

invention, illustrating the structure thereof.

Fig. 13 is a sectional view of an organic EL display device according to a thirteenth embodiment of the present invention, illustrating the structure thereof.

5 Fig. 14 is a sectional view of a conventional organic EL display device, illustrating the structure thereof.

Fig. 15 is a sectional view of another conventional organic EL display device disclosed in WO98/34437,
10 illustrating the structure thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Preferred embodiments of the present invention will be explained with reference to the drawings.

15 [First Embodiment]

Fig. 1 is a sectional view of an organic EL display device according to a first embodiment of the present invention, illustrating the structure thereof.

As shown in Fig. 1, an organic EL display device of
20 the embodiment comprises under electrodes 11 formed on a substrate 10, color changing layers 14 on the under electrodes 11, upper electrodes 12 opposite to the under electrodes 11 and an organic luminescent medium 15 formed between the under electrodes 11 and color changing layers
25 14. The color changing layers 14 are made of a conductive material.

The under electrodes 11 and upper electrodes 12 are constructed by arranging linear transparent electrodes in a striped pattern so that each under electrode 11 is
30 perpendicular to each upper electrode 12.